V1.3 Overview
1. x ≠ X
2. x = print(x)
3. ls( ) : show everything stored
4. rm( ) : remove
5. <- assign
6. numbers cannot be the first letter
7. "number" : character
8. sqrt( ) = ^(1/2)
9. abs( ) = absolute numbers
10. + : incomplete
11. up key : previous command / down key : move forward
12. # : ignore everything follows

V1.4 Vectors and Matrix
1. _:_ : generate sequence / seq(from, to, by)
2. rep( ) : repeat
- rep(1:3,times=2) >> 123123
- rep(seq(2,5,0.5),3)
3. x+y : 一對一運算
4. x <- c(1,3,5,7,9)
- x[2] >> 3
- x[-3] >> 1 3 7 9
- x[2:4] >> 3 5 7
- x[c(2,5)] >> 1 3
- x[x<4] >> 1 3
5. matrix(c(1,2,3,4,5,6,7,8,9),nrow=_,byrow=T)

	[,1]	[,2]	[,3]
[1,]	1	2	3
[2,]	4	5	6
[3,]	7	8	9

13. matrix(c(1,2,3,4,5,6,7,8,9),nrow=_,byrow=F)

	[,1]	[,2]	[,3]
[1,]	1	4	7
[2,]	2	5	8
[3,]	3	6	9

6. mat <-
- mat[1,2] >> 2

V1.5 Import Data from Excel
1. import CSV : read.csv(file.choose( ),header=TRUE) @ read.csv(file.choose( ),header=TRUE,sep=",")

2. import txt : read.delim(file.choose( ),header=TRUE) @
    read.csv(file.choose( ),header=TRUE,sep="\t")

V1.6 Export Data
1. write.table(DataToExport,file="檔名",row.names=F,sep=",")
-   names=F : 不要的
2. write.table(DataToExport,file="Path to the Folder/檔名",row.names=F,sep=",")
3. write.CSV(DataToExport,file="Path to the Folder/檔名",row.names=F,~~sep=","~~)

V1.7 Importing , Checking and Working with Data in R
1. read.table(file="檔名"header=T,sep="\t") @ 右上角Import Dataset
2. dim( ) : dimension
3. head( ) : first six rows / tail( ) : last six rows
4. names( ) : factor

V1.8 Working with Variables and Data in R
1. $__ : to extract data ex. 檔名$factor [but doesn't engrave inR
2. attach(filename) : engrave in R <-> detach( )
3. levels(factor) : 變數 ex. "yes""no"
4. summary(numeric)>>value/summary(factor)>>frequency

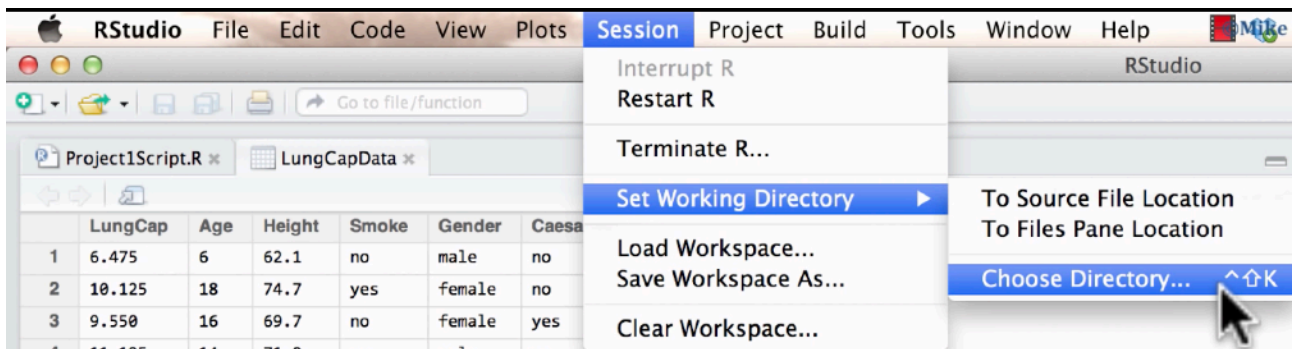# V1.9 Subsetting (Sort/Select) Data in R with Square Brackets
1. == : mathematic equal sign

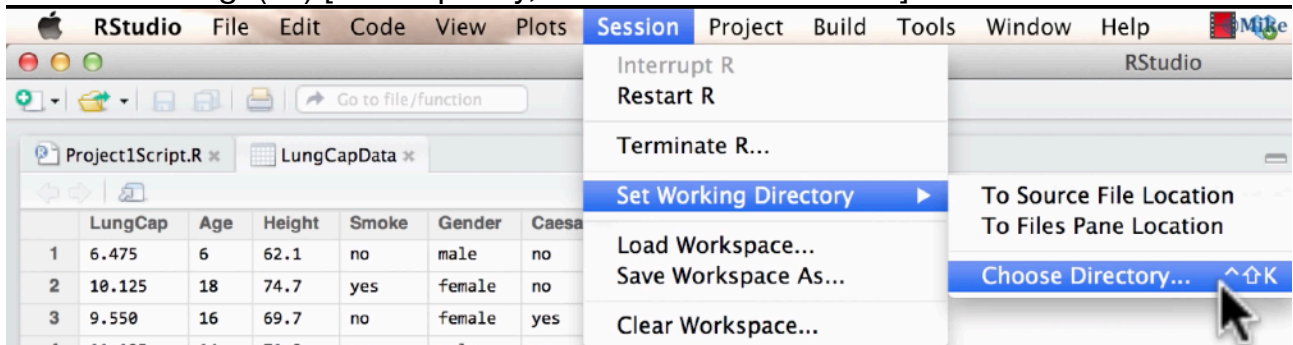# V1.10 Logic Statements (TRUE/FALSE), cbind and rbind Functions in R
1. cbind(,) : combine data
2. rm(list=ls( )) : move all data in memory
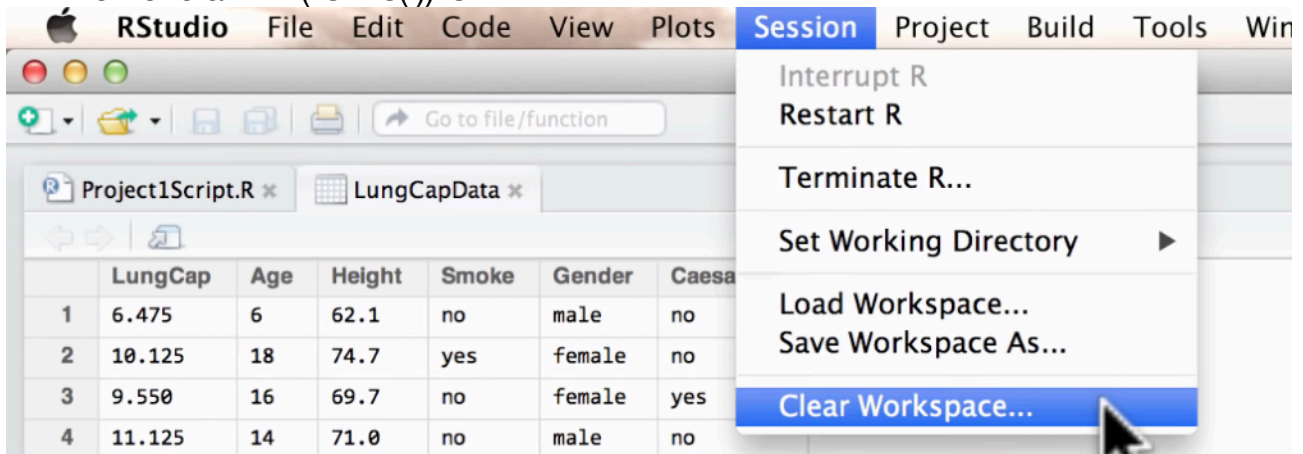
V1.11 Setting Up Working Directory in R
1. getwd( ): get current working directory
2. setwd("filename") @ __<- "path" & setwd(__) @

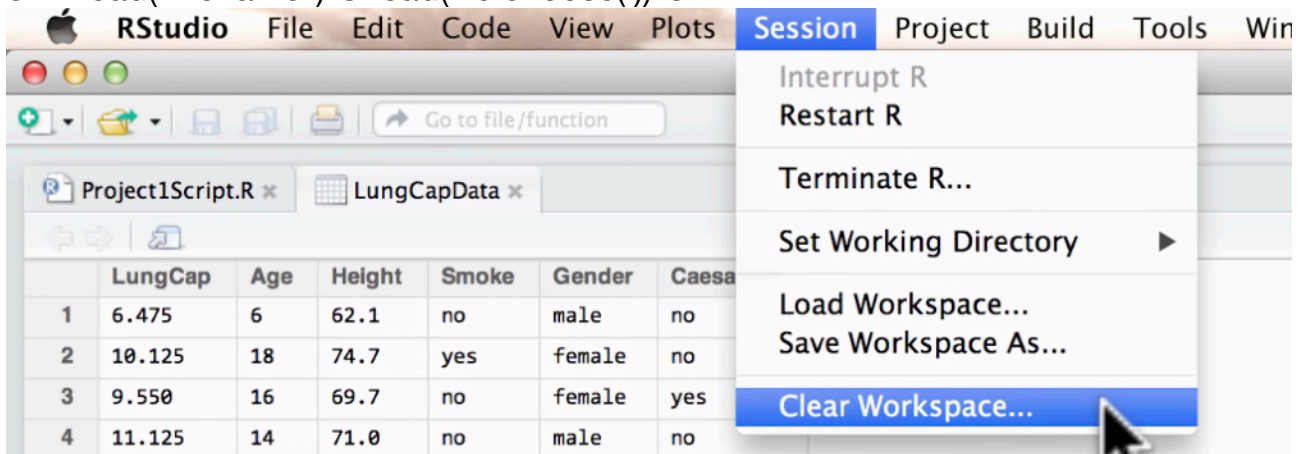3. save.image(" ") [if not specify, save in the current one] @

4. remove all: rm(list=ls( )) @

5. q( ): quit [will ask you whether to save]
6. load("filename") @ load(file.choose( )) @

V1.12 Writing Scripts in R

1. command+enter >> run
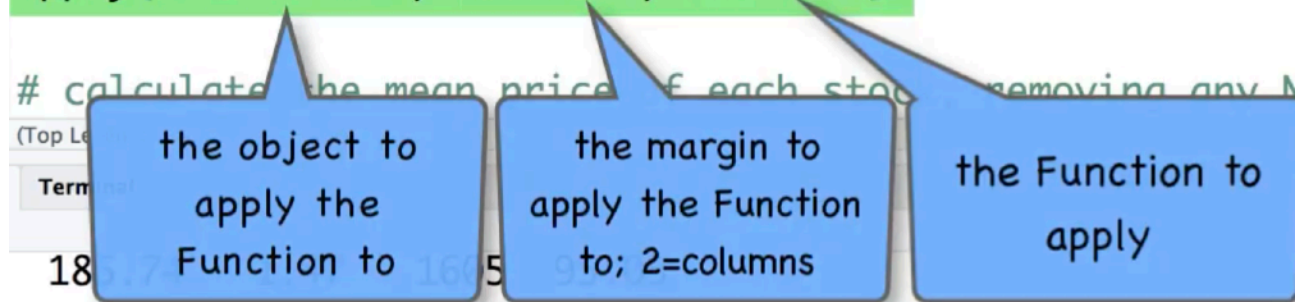
2.   tab >> suggestion

V1.13 How to Install Packages in R
1.   help( ) >> instruction
2.   library( )
3.   install.packages(" ")
4.   remove.packages(" ")

V1.15 Apply Function in R | R Tutorial
1.   apply(X=, MARGIN= ,FUN=)

2.   na.rm=TRUE: remove N/A data
3.   apply(X=, MARGIN= ,FUN=mean) @ colMeans( )
4.   apply(X=, MARGIN= ,FUN=sum) @ rowSums( )
5.   apply(X=, MARGIN= ,FUN=quantile, probs=c(0.2,0.8) @: to calculate the percentage
-    probs(,)let R know which percentiles to calculate
6.   apply(X=, MARGIN= ,FUN=plot ,type:"l") >> draw a plot
7.   points( ): 畫點

V1.16 tApply Function in R | R Tutorial

1.   tapply(X= ,INDEX= ,FUN=)
-    subset the data based on smoking status
2.   tapply(X= ,INDEX= ,FUN= ,simplify=FALSE@TRUE)

V1.17
1.

```
> table(Gender)
Gender
female    male
   358     367
>
> count <- table(Gender)
> count
Gender
female    male
   358     367
>
> table(Gender)/725
Gender
    female        male
0.4937931 0.5062069
```

2. barplot(percent, main="__", xlab="__", ylab="__", las= 1, names.arg= c("_", "_"))
-    main >> title
-    xlab >> x label
-    ylab >> y label
-    las= 1 >> y軸字正立
-    names.arg: bar name
3. Change to horizontal— barplot(percent, main="__", xlab="__", ylab="__", las= 1, names.arg= c("_", "_"), horiz= TRUE) [reverse xlab & ylab!!!]
4. pie(__, main=" ")
5. box( ): add frame